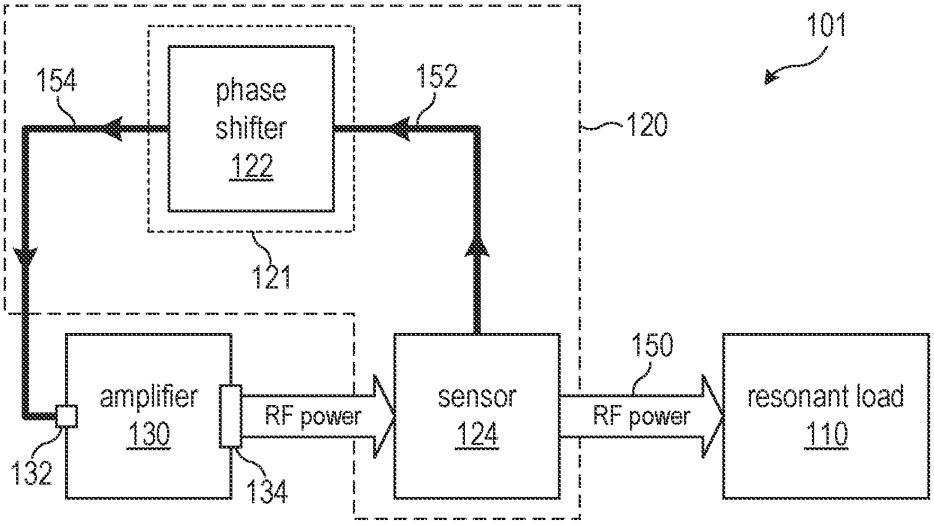

101
154
phase
shifter
122
152
120
121
amplifier
130
RF power
sensor
124
150
RF power
resonant load
110
132
134

FIG. 1

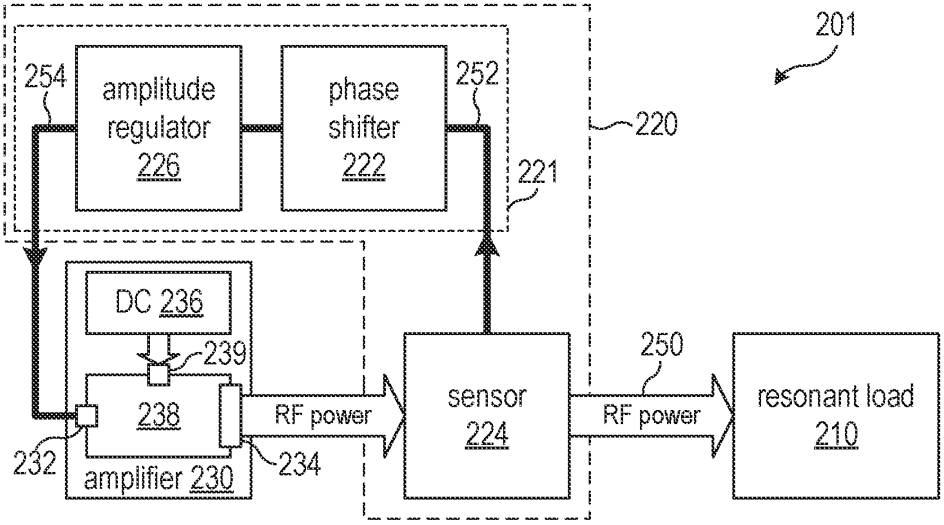

201
254
amplitude
regulator
226
phase
shifter
222
252
220
221
DC 236
239
238
RF power
sensor
224
250
RF power
resonant load
210
232
amplifier 230
234

FIG. 2

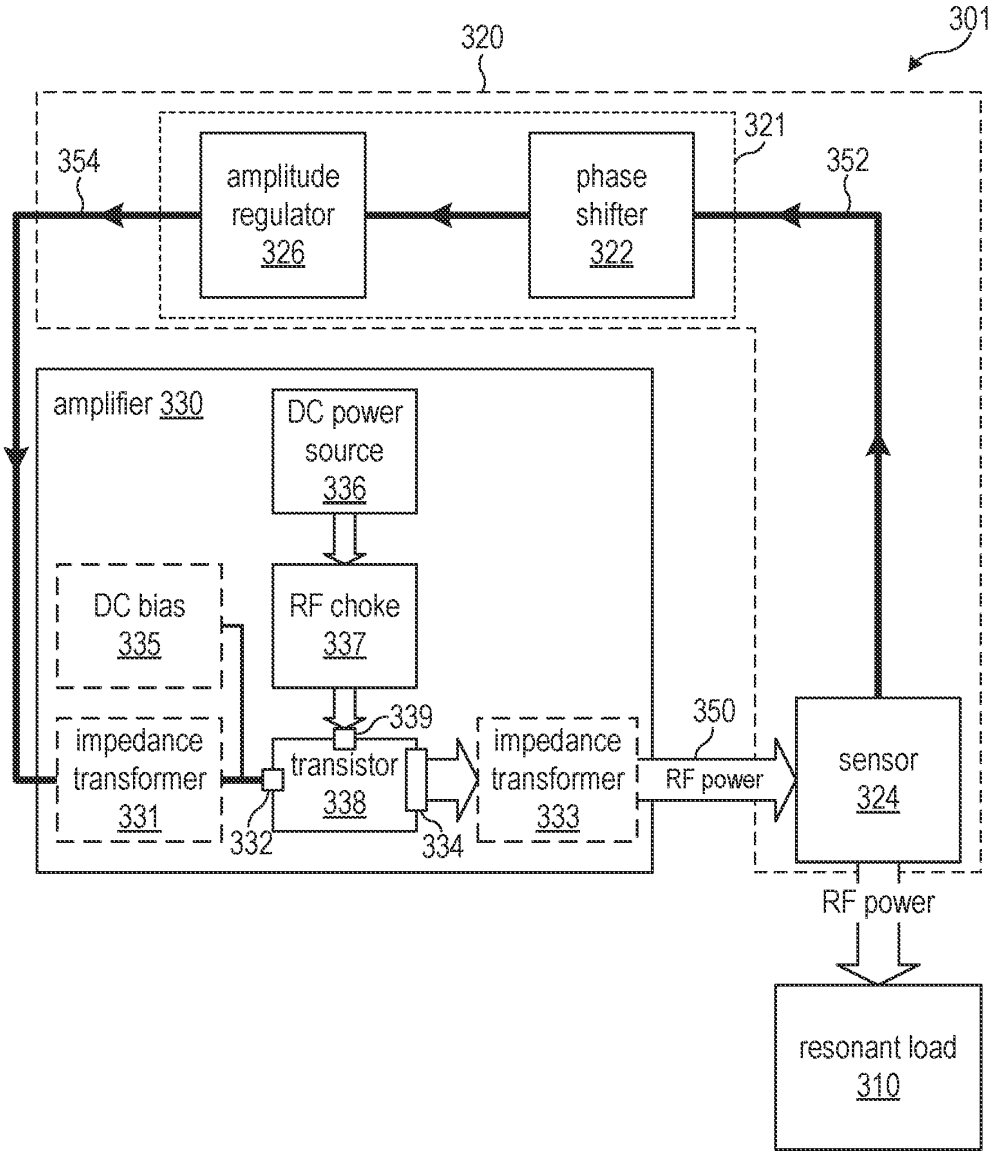

301
320
321
354
352
amplitude regulator 326
phase shifter 322
amplifier 330
DC power source 336
DC bias 335
RF choke 337
339
impedance transformer 331
transistor 338
impedance transformer 333
350
RF power
sensor 324
332
334
RF power
resonant load 310

FIG. 3

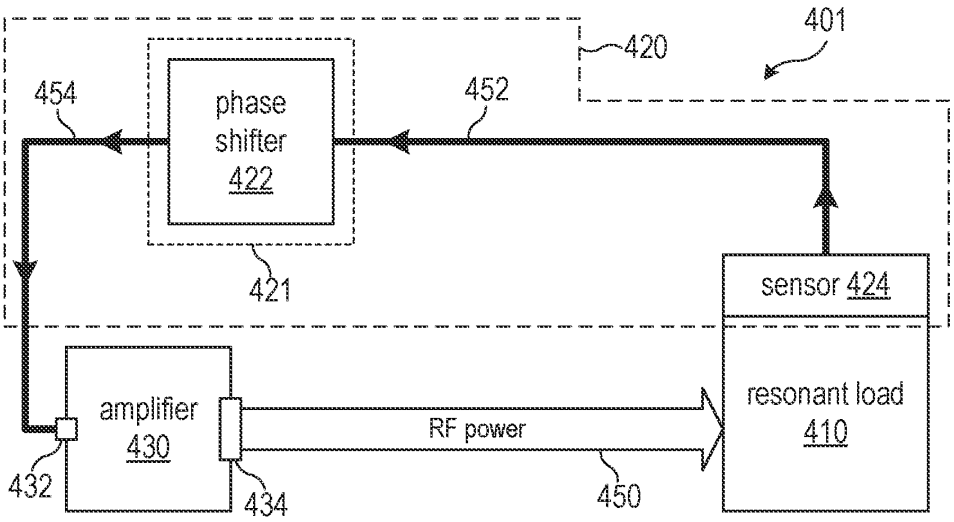

401
420
454
phase shifter 422
452
421
sensor 424
amplifier 430
RF power
resonant load 410
432
434
450

FIG. 4

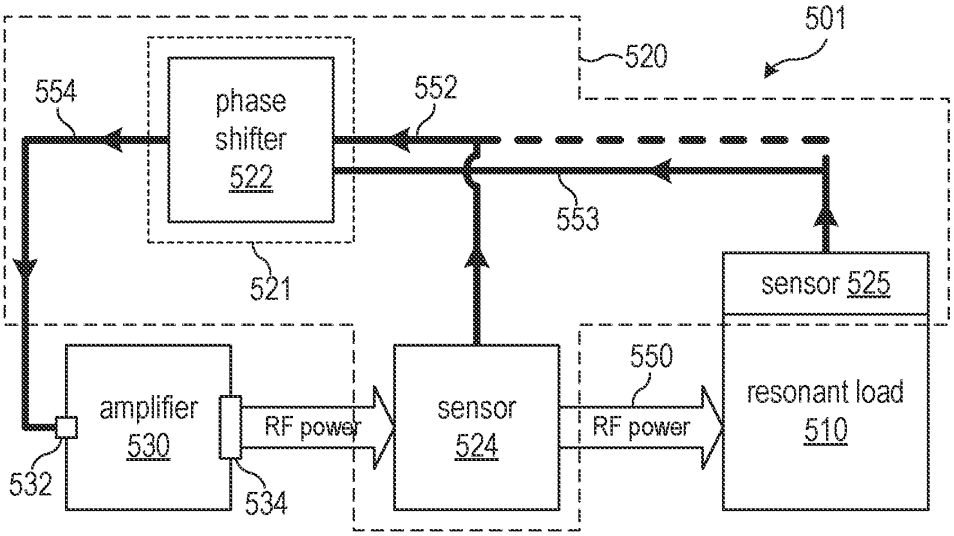

501
520
554
phase shifter 522
552
553
521
sensor 525
550
amplifier 530
RF power
sensor 524
RF power
resonant load 510
532
534

FIG. 5

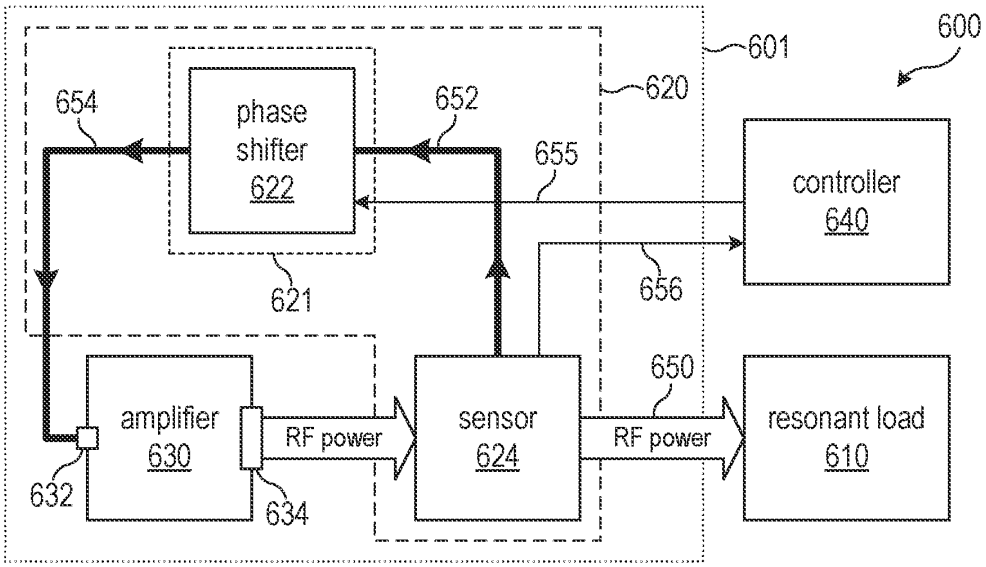

601
600
620
654
phase
shifter
622
652
655
controller
640
621
656
650
amplifier
630
RF power
sensor
624
RF power
resonant load
610
632
634

FIG. 6

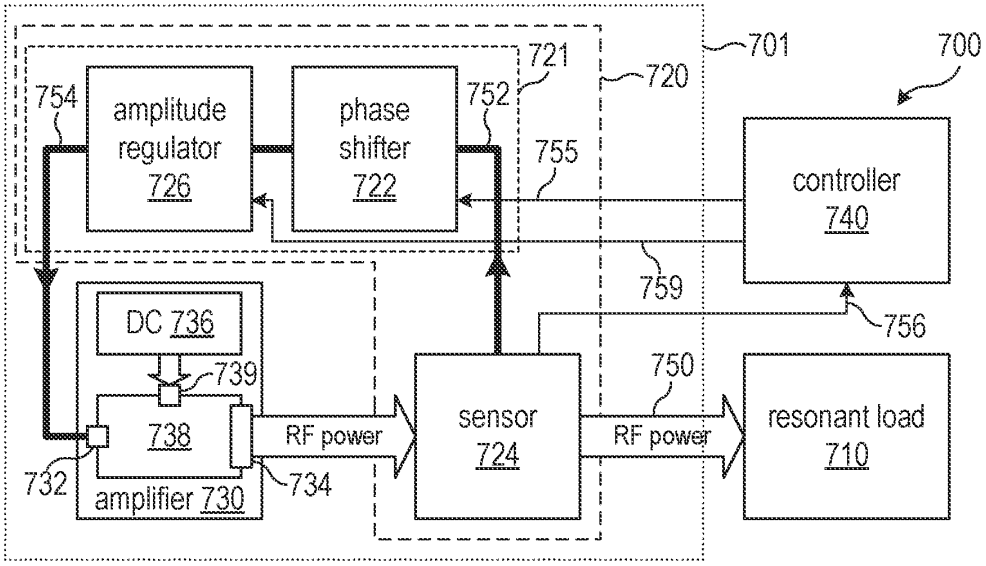

701
700
721
720
754
amplitude
regulator
726
phase
shifter
722
752
755
controller
740
759
DC 736
739
756
750
738
RF power
sensor
724
RF power
resonant load
710
732
amplifier 730
734

FIG. 7

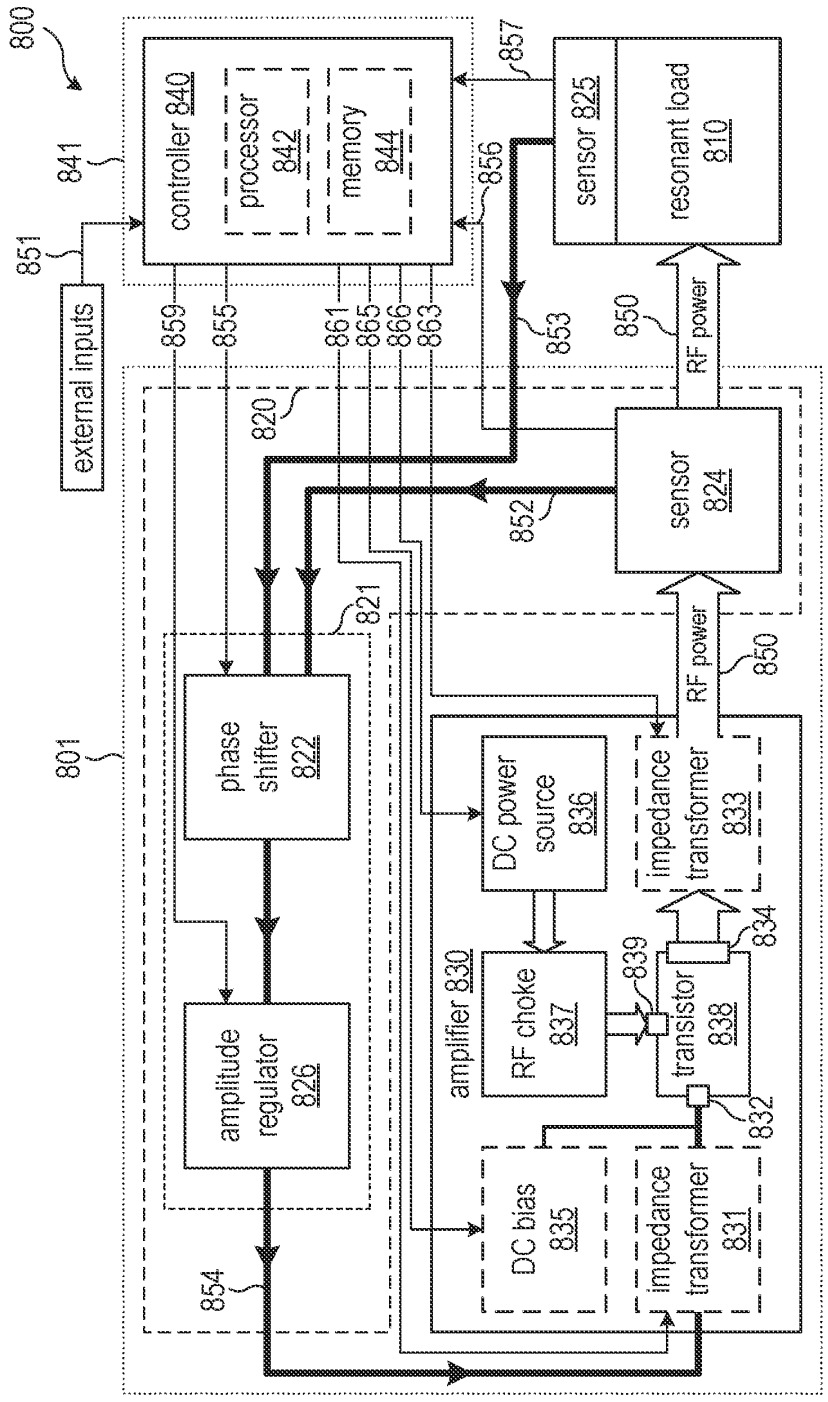

800
controller 840
processor 842
memory 844
841
851
external inputs
857
sensor 825
resonant load 810
856
859
855
861
865
866
863
853
850
RF power
820
sensor 824
852
821
801
phase shifter 822
amplitude regulator 826
DC power source 836
impedance transformer 833
amplifier 830
RF choke 837
839
transistor 838
834
832
DC bias 835
impedance transformer 831
854

FIG. 8

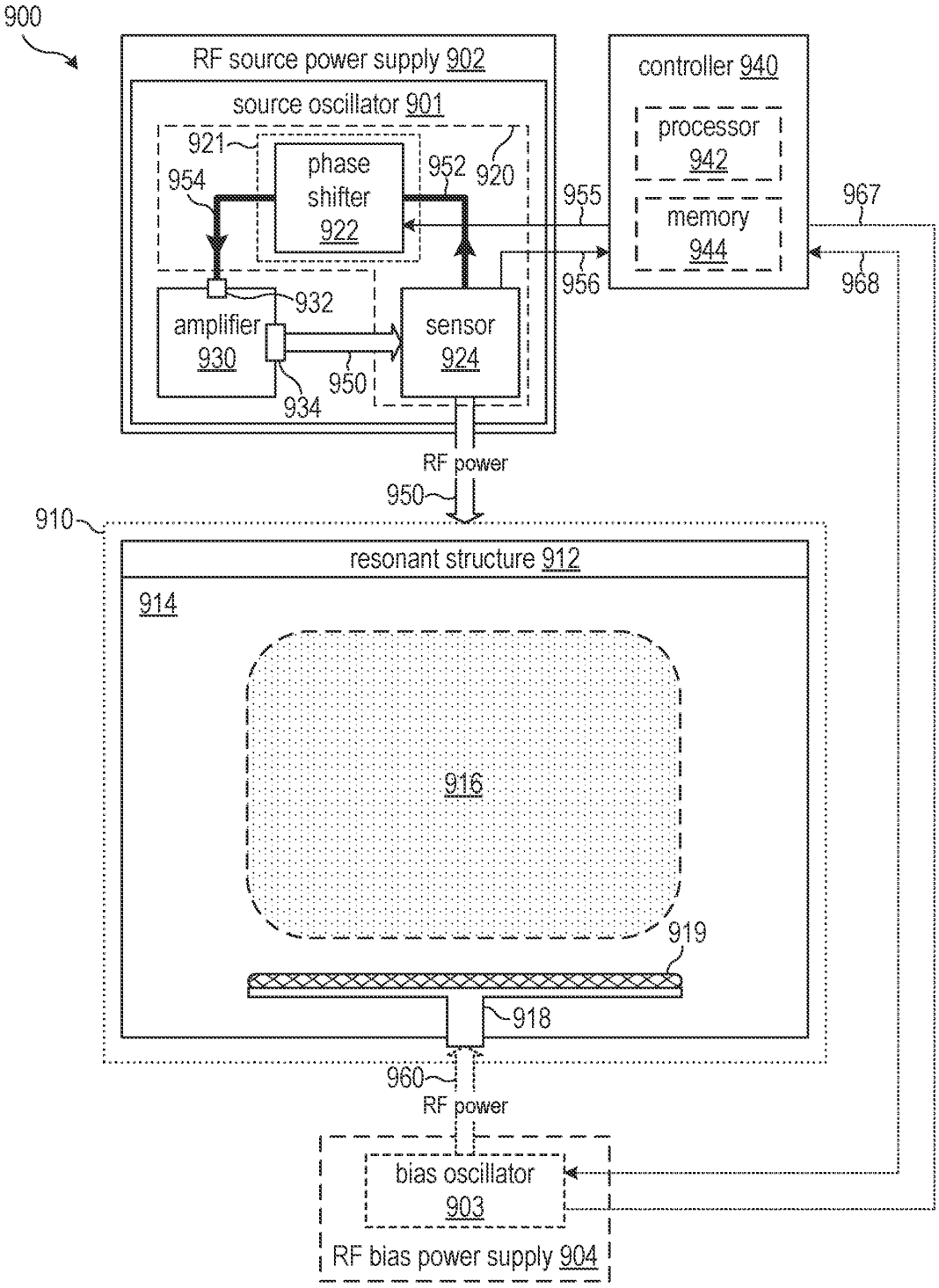

900
RF source power supply 902
source oscillator 901
921
phase shifter 922
952
920
954
955
967
controller 940
processor 942
memory 944
956
968
932
amplifier 930
sensor 924
950
934
RF power
950
910
resonant structure 912
914
916
919
918
960
RF power
bias oscillator 903
RF bias power supply 904

FIG. 9

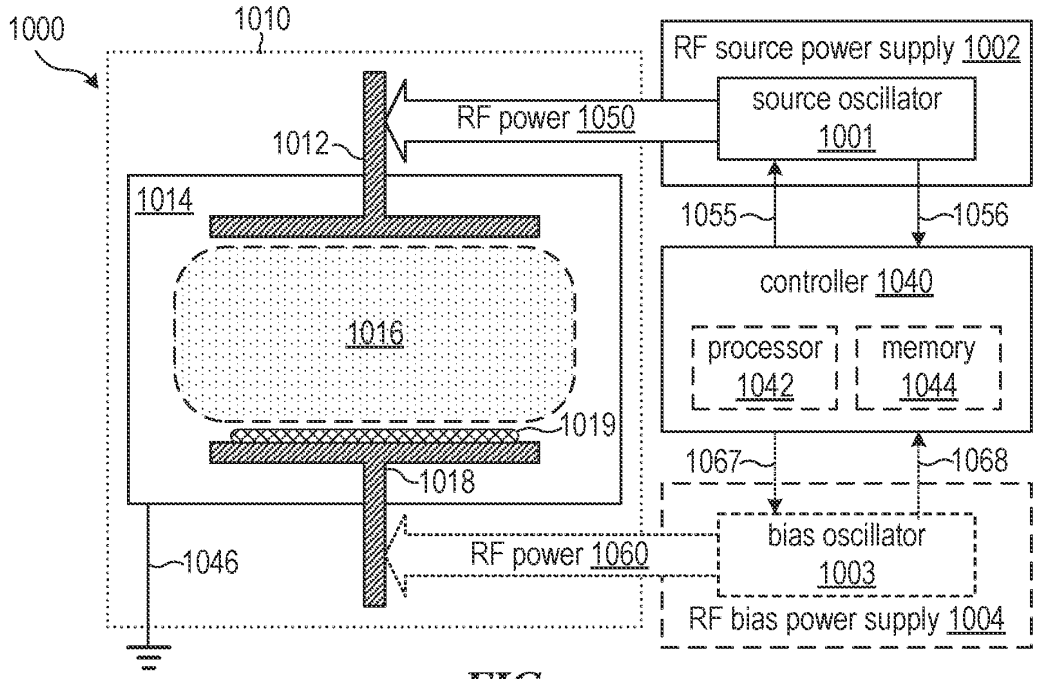

1000
1010
RF source power supply 1002
source oscillator 1001
RF power 1050
1012
1014
1055
1056
controller 1040
processor 1042
memory 1044
1016
1019
1018
1067
1068
bias oscillator 1003
1046
RF power 1060
RF bias power supply 1004

FIG. 10

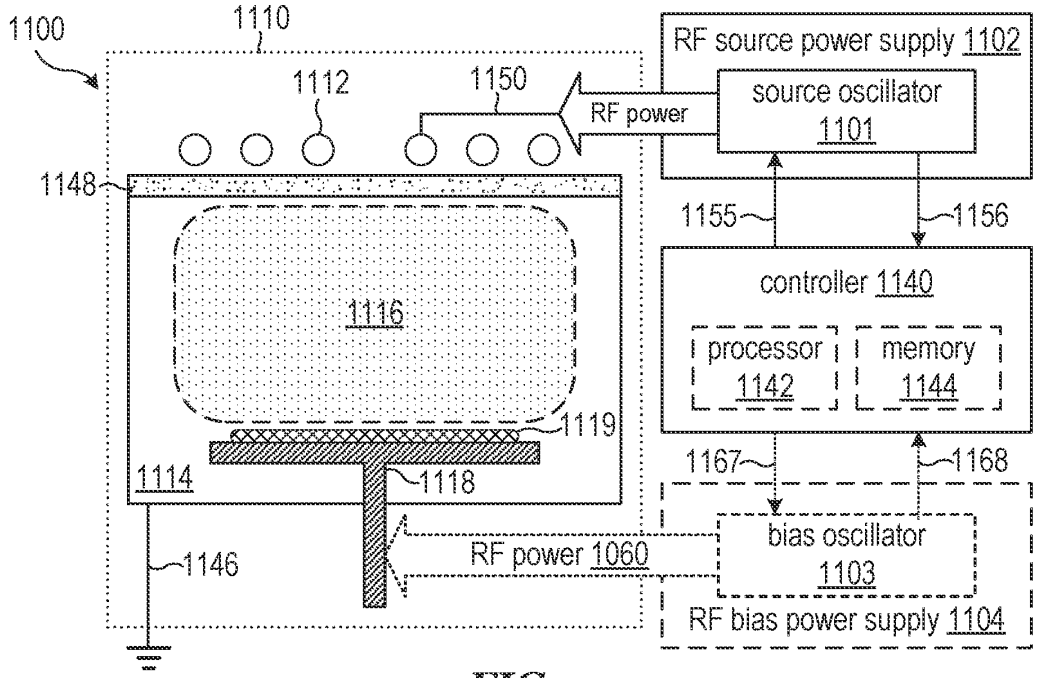

1100
1110
RF source power supply 1102
1112
1150
source oscillator 1101
RF power
1148
1155
1156
controller 1140
processor 1142
memory 1144
1116
1119
1114
1118
1167
1168
bias oscillator 1103
1146
RF power 1060
RF bias power supply 1104

FIG. 11

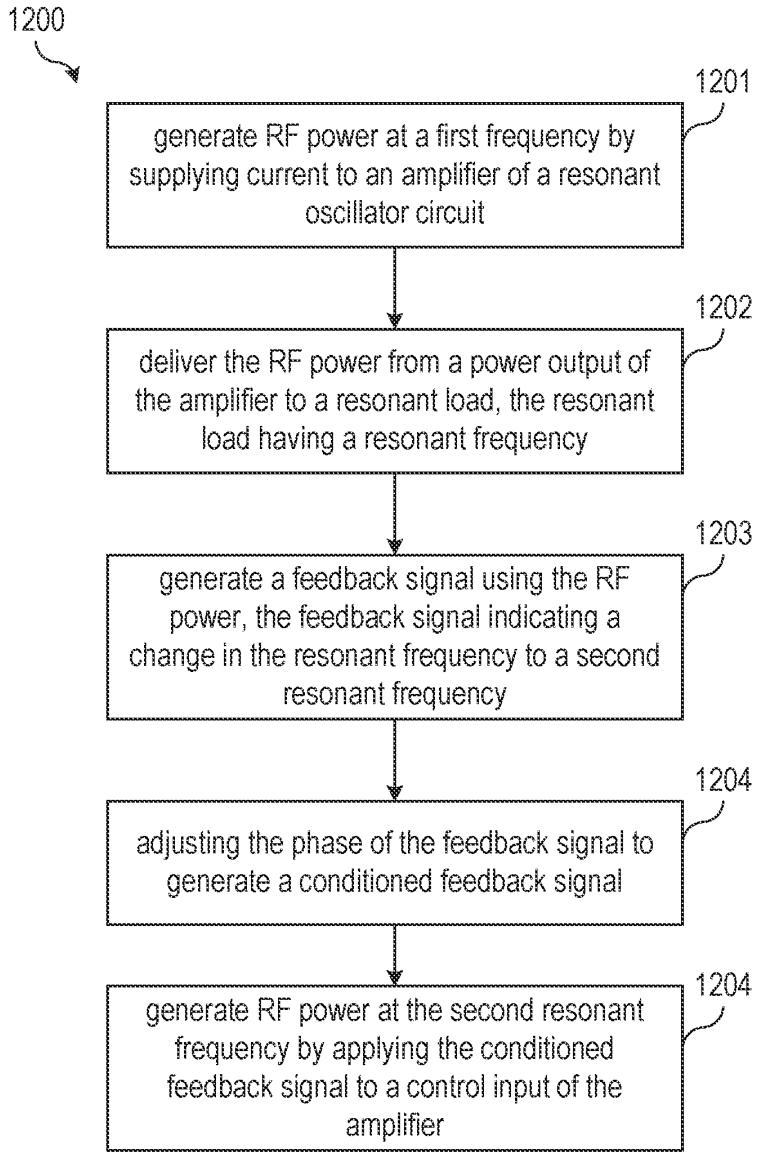

1200
1201
generate RF power at a first frequency by supplying current to an amplifier of a resonant oscillator circuit
1202
deliver the RF power from a power output of the amplifier to a resonant load, the resonant load having a resonant frequency
1203
generate a feedback signal using the RF power, the feedback signal indicating a change in the resonant frequency to a second resonant frequency
1204
adjusting the phase of the feedback signal to generate a conditioned feedback signal
1204
generate RF power at the second resonant frequency by applying the conditioned feedback signal to a control input of the amplifier

FIG. 12